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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/565,972 | 01/26/2006 | Giuseppe Carlos Sarno | 038665.57313US | 9474 |
| 23911 | 7590 | 07/29/2008 | EXAMINER | |
| CROWELL & MORING LLP | | | ISSING, GREGORY C | |
| INTELLECTUAL PROPERTY GROUP | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/565,972 | SARNO ET AL. | |
| | Examiner | Art Unit | |
| | Gregory C. Issing | 3662 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-15 is/are pending in the application.
 - 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 1-15 is/are rejected.
- 7) Claim(s) ____ is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____ . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/19/06, 1/26/06</u> . | 6) <input type="checkbox"/> Other: ____ . |

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1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2, 4, 6, 8, 10, 13, 14, and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Regarding claims 2 and 8, it is not definite what further structure or step is performed by the claim language. Thus, neither claim 2 nor 8 appears to further define the claimed apparatus or method.

4. Regarding claims 4 and 10, the following inconsistencies and inclarities are present.

Claim 1 recites specific means for computing relative time differences of arrival between receivers, yet claim 4 recites correcting means which measure time differences of arrival between pairs of receivers; it is not clear whether one or both of the means for computing and the means for correcting measure the time differences (*step a*). It is not clear how emitter position is estimated from the assumption of straight-line paths (*step b*). It is not clear what the distinction is between a “receiver” and a “receiving platform” (*step c*). The “known height” is not defined in the claims and it is not clear what this represents (*step d*). The language “predict actual path length” is not clear since predicting connotes the use of a model to estimate a length and appears contradictory to an actual length (*step d*). The language of “*step d*” fails to clearly and distinctly define the subject matter. The language of “*step e*” fails to clearly and distinctly define the subject matter; the difference between a "path length" and a "path" does not equate to a value since they do not represent the same quantity; and, it is not clear how the obtained difference in apparent path lengths forms a correction to a TDOA. “*Step f*” forms an infinite loop that

prevents step g from being performed. “*Step g*” is indefinite since the scope of “continue until the corrections in Step e) converge” is not clearly and distinctly defined.

5. Regarding claim 6, the language “according to any claim 5” appears to be a typographical error.

6. Claims 13-14 indefinite since it is not clear how the claim language further limits the steps of the method. The metes and bounds of "program code means" is not distinctly set forth and does not provide a further step of the process.

7. Claim 15 is indefinite since it is not understood what it is. The claim fails to set forth the metes and bounds of the feature being claimed. As written, the limitation appears to be met by any and every “computer” since every computer is operable to run a program loaded thereon.

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 4, 10, and 13-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification fails to sufficiently describe any “program code means” for performing the steps of the method as set forth in claims 13 and 14. The specification fails to provide an enabling disclosure for a “computer program” which when loaded into a computer operates the apparatus of claim 1. Regarding claims 4 and 10, the specification is non-enabling with regard to the formation of a

correction to the time differences of arrival since the corrections appear to be described with respect to the times of arrivals.

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 2, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Choi et al (*Localization of Target Tracking and Navigating by Correcting Atmospheric Effects*).

12. Choi et al disclose the claimed apparatus and method for locating an emitter by measuring sets of time delays associated with RF wave fronts between receivers from the emitter and the correction of the time delays due to the propagation/refraction of the RF waves through the Earth's atmosphere using ray bending or ray tracing compensation.

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 3, 4, 6, 9, 10, and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al in view of Minter et al (6,407,703).

15. Choi et al teach the localization of targets using time delay measurements determined from propagation or RF signals through the Earth's atmosphere and compensating for path length discrepancies due to refraction by using ray bending or ray tracing compensation. Choi et al do

not address the use of airborne platforms or the number thereof, as well as the use of a Kalman filter

16. Minter et al disclose that it is known in terms of emitter location techniques to utilize TDOA methods to measure relative time of arrivals at two or more locations such as aircraft (3:26-40) as well as teach the conventionality of the use of a Kalman filter to enhance the accuracy of the location estimate (4:53-65 and 7:19-8:26). Additionally, biases can be corrected for using a comparison of actual measurements to predicted measurements (2:56-3:2).

17. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Choi et al by incorporating the teachings of Minter et al by providing the correction of the propagation of the RF waves through the Earth's atmosphere in the system of locating a ground emitter from a plurality of airborne platforms measuring relative times of arrivals. Each of the claim limitations is shown to be known and one of ordinary skill in the art would combine since the use of the teachings of Minter et al would yield a predictable result for correcting for path length discrepancies in the determination of emitter location using RF propagation through the Earth's atmosphere. In light of the fact that the specification lacks any clear description of the computer program or the computer program product, the claims 13-15 as best understood, are met in light of the fact that the procedure is conventionally operated in a processor run by programs stored in a memory, i.e. a readable medium.

18. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al in view of either one of Choi (*Performance Comparison of Tropospheric Propagation Model: Ray Trace Analysis Results Using Worldwide Tropospheric Databases*) or Blake (*Ray Height Computation for a Continuous Non-Linear Atmospheric Refraction-Index Profile*).

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19. Choi et al teach the localization of targets using time delay measurements determined from propagation or RF signals through the Earth's atmosphere and compensating for path length discrepancies due to refraction by using ray bending or ray tracing compensation. Choi et al do not address the specific model for compensation.

20. Each of Choi (Equation 45) and Blake (Equation 2) teach the specific model used to correct the path length. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Choi et al by using any well-known ray tracing/ray bending model to compensate for path length discrepancies, including the known Blake model as shown by each of Choi and Blake since such correction is known and will yield a predictable result.

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Schiffmiller et al (6,933,888) disclose a multi-platform emitter location system including an iterative process for converging errors, see Figure 8.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory C. Issing whose telephone number is (571)-272-6973. The examiner can normally be reached on Monday - Thursday 6:00 AM- 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on (571)-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Gregory C. Issing/
Primary Examiner
Art Unit 3662

gci